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EXPERIENCE AND NATURE

By PROFESSOR JOHN DEWEY of Columbia University

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THE JOURNAL OF PHILOSOPHY

CROSSING "THE RUBICON BETWEEN MECHANISM AND LIFE"

THE interest now taken in what may be termed border-line problems—problems arising between two or more adjacent sciences—has shown the need of fundamental principles, both of insight and of methodology, which may serve as a common basis of agreement. As matters stand, however, there is apt to be a divergence between the habitual views of the physicist and of the biologist; while the psychologist not only stands somewhat apart from either, but even is unable to bridge the gap between his own subject and the social and humanistic sciences. Nevertheless, psychologists are awakening to certain aspects of their subject which have a very direct connection with general scientific principles, and these aspects suggest a conception of *reality* which seems worthy of a wider consideration than the psychologist alone can give it. It is therefore the purpose of this paper to bring some of these ideas into contact with the ideas employed by workers in other fields of science.

For a long time Mechanism and Teleology have been the outstanding principles of scholarly research. Mechanism is a term frequently met with in expositions of the so-called exact sciences; whereas teleology seems to be implicit in most of the theories of art, history, literature, the social sciences, psychology, and, indeed, a large part of biology. There are, to be sure, some notable exceptions, which aim to reduce the sociological, the biological, and the psychological sciences to terms of mechanism.

Strictly speaking, mechanism and teleology are contradictory terms. Within the inanimate realm it has seemed appropriate to follow the laws of mechanics, and to conceive reality as divisible into parts or entities which act and react one upon another by virtue of forces resident in each separate part. With reference to the manifestations of life, however, the contradictory principle of guidance, purpose, or end enters into consideration. This is the subject of an essay by a distinguished physicist, Frederick Soddy, entitled "The Rubicon between Mechanism and Life";[1] from which the following paragraphs are chosen:

[1] *Cf.* "Matter, Energy, Consciousness, and Spirit," 1919, in *Science and Life.* London: 1921, p. 168 ff.

"There is, of course, a danger, since knowledge in these days is of necessity patchy, and first-class minds are rarely content with the known, but are the first to push off into the unknown, and so become specialists, that the mystery of life becomes automatically thrust out from those regions each has independently explored for himself into those known only at second-hand and by hearsay or from books. Thus, as a physicist or chemist, I hold that there is no mystery in the proper sense in the inanimate universe, and I put the Rubicon between mechanism and life. A biologist would probably have a very great deal to say on this question, and conceivably might totally disagree. But, apart from extreme opinions on such a point, I think there is a growing tendency to distinguish between the mechanism of life and its conscious regulation. I think it would be admitted that a completeness of knowledge, equal to that in the processes of inanimate nature, with regard to the former, and even the artificial generation of life of a simple kind, would not necessarily add anything to the solution of the real mystery.

"Once the Rubicon between the most complex non-living mechanism and the simplest living cell is crossed, the doctrine of evolution seems to point clearly to an unbroken road of development up to the higher expressions of life. On this view, the peculiar problems of religion and the human soul are the most fundamental and the most incapable of enunciation. In man, it is true, we get hopelessly beyond the range of physical science, but, in comparison with the simplest living organism, it is a difference between magnitudes alike infinite. Mechanism there is as before, and subconscious control for most complicated routine processes, but the mind can hardly be equal to the task of explaining itself to itself. The mechanical and even the animal or vital aspects have been thrust into the background by a developed personality, that consistently acts and tries to act—and therefore, in the language of science, already explained, *is* a distinct being, resident in the body as a man may live in a house, and, if real, then by the canons of human thought, immortal. Thought, reasoning power, memory, free will, the æsthetic perceptions of beauty and harmony, the ethical ideas of virtue, justice, duty, and self-sacrifice, and the spiritual aspirations of holiness and triumph over death, divide him from the simplest form of life. Science, assuredly, has a long road to travel from the stars to the kingdom of heaven. But there seems to be but the one chasm that can not be crossed, and which, though the gulf ever narrows, still remains unbridged. As Tennyson has it:

> Flower in the crannied wall,
> I pluck you out of the crannies,

I hold you here, root and all, in my hand,
Little flower—but *if* I could understand
What you are, root and all, and all in all,
I should know what God and man is."

Here an exact scientist expresses himself, with a full recognition of the incommensurability of life and inanimate nature, and apparently without a hope that his science will ever be able to bridge the gap.

More hopeful, perhaps, were the views entertained by the acute mind of Jaques Loeb, whose principles of biology made him a consistent denier of a Rubicon which needs must be crossed. In a paper on "The Explanation of the Colloidal Behavior of Proteins," published shortly before his death, he introduced his problem with the following succinct statement: "Living matter is essentially colloidal in character, and we can not well conceive of an organism consisting exclusively of crystalloidal matter. This fact suggests that life-phenomena depend upon, or are intrinsically linked with, certain characteristics of colloidal behavior. It is, therefore, natural that a systematic study of the nature of special life-phenomena should be preceded by a scientific theory of colloidal behavior. By a scientific theory, however, we do not understand speculations or guesses built on qualitative experiments or no experiments at all, but the derivative of results from a rationalistic, mathematical formula which permits us to calculate, with an adequate degree of accuracy, the quantitative measurements of colloidal behavior."[2]

To this task Loeb addresses himself with a success I shall not attempt to estimate; but it is obvious that the same reliance upon mathematical formulæ, which, as Soddy remarks, leave "no mystery in the proper sense in the inanimate universe," has been affirmed by Loeb to be a sufficient means of elucidating life by "quantitative measurements."

In accepting Loeb's ultimate position, as set forth more completely in other of his writings, we are apparently called upon, as Lord Balfour is reported to have said in the course of a Gifford Lecture, "to choose between blind chance and guidance; and we can not imagine anybody brought up directly to deal with that choice who can hesitate which of the two alternatives he will accept. I am convinced," says Balfour, "that the more the problem is looked at on the broad lines I have endeavored to lay before you, the more you will feel that as you have to choose between these you will undoubtedly choose guidance."

For the accuracy of this quotation, taken from a newspaper re-

[2] *Science*, 1922, 56, p. 732.

port, I can not vouch;[3] but the words will serve, perhaps, as a general statement from the side of teleology such as one can easily parallel in a variety of philosophical and theological disquisitions.

The contradiction of mechanism and teleology is again touched upon in an address, "On Some Aspects of Animal Mechanism," by Sir Charles S. Sherrington. While Sherrington makes no argument for teleology, he does give a number of interesting examples of the inadequacy of mechanistic conceptions when applied to organic behavior. What chiefly impresses me, as a layman in biology, is the contrast Sherrington has drawn between the ultra-refinement of reflex mechanisms which operate with such nicety of balance and proportion while the organism is a "going concern," and "some aspects of nervous mechanism," for which he tells us, "the nerve-impulse offers little or no clue." The description he gives follows: "The fibers of nerve-trunks are, perhaps, of all nerve-structures those that are best-known. They constitute, for example, the motor-nerves of muscle and the sensory nerves of the skin. They establish their ties with muscle and skin during embryonic life, and maintain them practically unaltered throughout the individual's existence, growing no further. If severed, say by a wound, they die for their whole length between the point of severance and the muscle or skin they go to. Then at once the cut ends of the nerve-fibers start re-growing from the point of severance, although for years they have given no sign of growth. The fiber, so to say, tries to grow out to reach to its old far-distant muscle. There are difficulties in its way. A multitude of non-nervous repair cells growing in the wound spin scar-tissue across the new fiber's path. Between these alien cells the new nerve-fiber threads a tortuous way, avoiding and never joining any of them. This obstruction it may take many days to traverse. Then it reaches a region where the sheath-cells of the old dead nerve-fibers lie altered beyond ordinary recognition. But the growing fiber recognizes them. It joins them and, tunneling through endless chains of them, arrives finally, after weeks or months, at the wasted muscle-fibers which seem to have been its goal, for it connects with them at once. It pierces their covering membranes and re-forms with their substance junctions of characteristic pattern resembling the original that had died weeks or months before. Then its growth ceases, abruptly, as it began, and the wasted muscle recovers, and the lost function is restored."[4]

This description is of unusual interest to a psychologist because it tallies so remarkably with descriptions both of instinctive behavior

[3] I have been unable to trace precisely this quotation in the published lectures. *Theism and Thought*, 1924; but a similar statement appears on p. 42.

[4] *Science*, 1922, 56, p. 348.

and of so-called intelligent behavior on the part of man and other animals. The questions which Sherrington is moved to ask with regard to this regenerative action are as follows: "Can we trace the causes of this beneficent yet so unaccountable reaction? How is it this severance can start the nerve re-growing? How does the nerve-fiber find its lost muscle microscopically miles away? What is the mechanism that drives and guides it? Is it a chemotaxis like that of the antherozooid, in the botanical experiment, drawn towards the focus of the dissolved malic acid? If so, there must be a marvelously arranged play of intricate sequences of chemically attractive and repellent substances dissolved suitably point to point along the tissue."[5]

In summing up the case Sherrington ends with a not too well-assured conviction. "It is a mechanism against the seeming prescience of which are to be set its fallibility and its limitations"; since "the sprouting nerve-fibers of a motor nerve with impulses for muscular contraction can by misadventure take their way to denervated skin instead of muscle." "The 'how' of its working," he continues, "is at present chiefly traceable to us in the steps of its results rather than in comprehension of its intimate reactions; as to its mechanism, perhaps the point of chief import for us here is that those who are closest students of it still regard it as a mechanism. If 'to know' be 'to know the causes,' we must confess to want of knowledge of how its mechanism is contrived."[6]

Returning again to the parallel between regeneration and the everyday selective behavior of man and animals, it is certainly impressive if, as Sherrington says, "the regenerating nerve rebuilds to a plan that spells for future function, but throughout all its steps, prior to the time when it actually reaches the muscle or skin, no actual performance of nerve-function can take place. *What is constructed is functionally useless until the whole is complete.*"[7] This last statement, which I have placed in italics, also expresses the essential characteristic of a new achievement in learning the solution of a problem; because the solution must be discovered before it can begin to function. What is denominated as intelligent behavior or action with insight always rests in the first instance upon something very like the functionless procedure described in the persistency of the regenerating nerve.

I am not sure that Sherrington realizes the full extent of this parallel as it must appear to those who are familiar with current reports of experiments upon animal behavior; but it is noteworthy

[5] *Op. cit.*, pp. 348–9.
[6] *Op. cit.*, p. 350.
[7] *Op. cit.*, p. 350.

that one of the more recent and more striking of these investigations[8] should conclude, after an extended series of experiments with apes, that the solution of a problem new to the animal rests upon the ape's ability to reconstruct the situation, and that this reconstruction involves the discovery of a specific type of perception and response which, as Sherrington says, "is functionally useless until the whole is complete." This parallel serves Sherrington, as I have also seized upon it to serve me, in drawing a likeness, which I, for one, am inclined to think is fundamental, between the phenomena not only of life and matter, but also of mind and matter.

The remainder of Sherrington's address, as those who have read it will recall, is devoted to the relation and resemblance between mental actions and nervous actions. With respect to the nature of this resemblance a point of view has been advanced by psychology from which we can perhaps hope in time to cross the Rubicon pictured by Soddy, and thus overcome the dilemma that mechanism and teleology seem to present.

The way by which the dilemma has been set aside is the quite simple one of denying its existence;[9] for it has been demonstrated, in part, at least, that the reality with which science is concerned is neither a mechanical assemblage of elements, nor the manifestation of an "increasing purpose." Both these conceptions, as commonly employed, are highly colored by man's peculiar habits of thought. The first, being derived from mathematical ways of thinking, is ultra-rationalistic or logical, whereas the second is obviously practical and ultimately requires the assumption of an omniscient prime-mover. As regards mechanism, which is usually held to be the more scientific conception of the two, a logical fallacy would be committed if we were to infer that because man has devised accurate means of calculation, therefore the essence of what he undertakes to calculate must coincide with the quantification adduced. No objection is here raised to mathematics as a method of scientific analysis and control, but only to the false inference that calculation reveals the structure of matter as consisting in aggregates of indefinitely small parts or elements. Such an inference is certainly misleading; less so, perhaps, in the field of inanimate nature than in the field of life and mind; yet as a fundamental conception, the identification of real data with mathematical units would in no case be warranted.

If the alternative of mechanism is not teleology with its guiding principle fusing and transfusing into onward-moving and progressive

[8] Köhler, W., *The Mentality of Apes*, New York, 1925.

[9] *Cf.* Köhler, W., *Die physichen Gestalten in Ruhe und in Stationären Zustand.* Braunschweig: 1920.

wholes that which from a narrower view is sometimes taken to be but an aggregate of parts, what then *is* Reality?

The answer that has been proposed is this: Reality is neither an assemblage of elements resulting from a "last analysis"; nor is it only a set of "expressions in terms of mathematical conventions, of the complex relations and systems of relations subsisting between sense data," as Dunlap[10] states it to be. Instead, the basic feature of reality is a "closed system," a self-constituted whole, whose simplest manifestation is a state of equilibrium, either static or dynamic, wherein the same conditions are fulfilled throughout the entire system. These systems are called by German investigators, *Gestalten,* and they may be illustrated in the physical world by the uniformity of a closed electrical circuit, or by a fluid flowing regularly through a pipe, wherein every abstract part or moment of the flow is determined by every other.

L. J. Henderson, interpreting Willard Gibbs' Phase-Rule, describes similar characteristics of reality when he writes: "I. Other things being equal, the stability of a system increases with the number of phases, and also with the number of restrictions upon the intensities of energy, *e.g.,* temperature, and upon the concentrations. Thus a system of three phases is more stable than a similar system of two phases; a system of constant temperature is more stable than a similar system in which the temperature is variable; and a system in which the tension of carbon dioxide is constant is more stable than one in which this is a variable quantity. II. Other things being equal, the stability of a system *diminishes* with increase of the number of its undecomposed constituent molecular species, and the number of different forms of energy, *e.g.,* heat, pressure, electrical potential, surface-tension, which are involved in its activities."[11]

According to the Phase-Rule the number of degrees of freedom, other things being equal, increases or diminishes as the number of phases diminishes or increases; the *phases* being the "proximate subordinate parts of a system or isolated aggregate of matter" constituting a homogeneous body. A phase may be solid, liquid, or gaseous. Its only essential characteristic being physical and chemical homogeneity of one perfectly definite and absolutely uniform structure and composition."[12]

Henderson concludes that "the principal peculiarity of the universe which makes diversity of evolution possible is original and anterior to all instances of the processes which condition it, and . . .

[10] *Cf.* Knight Dunlap, *Elements of Scientific Psychology,* St. Louis, 1922, p. 43.

[11] *Cf. The Order of Nature,* Cambridge, 1917, pp. 136–7.

[12] *Op. cit.,* pp. 127–8.

this peculiarity consists of a group of characteristics such that they can not be regarded as merely contingent."[13] He argues that no mechanical cause whatever is conceivable of these original conditions, and therefore accepts teleology, not as design or purpose, but merely to employ "the vaguest possible term which can be imagined."[14]

Köhler endeavors to escape teleology, even of this vague sort, by maintaining an identity between the original forms of symmetry and proportion manifest alike in the physical *Gestalten* and in the descriptive phenomena of perception. He thus aims to avoid altogether the point-to-point correspondence of parallelism.

After casting about for a term to replace mechanism and teleology, as the occasion of these uniformities of mind and nature, I venture to suggest *integration* as it has come to be used by neurologists and physiologists. I realize that, as usually defined, the term is somewhat prejudicial to my meaning in its emphasis on *parts* or *elements*. Thus, the Oxford Dictionary states that *integration* is the "making up or composition of a whole by adding together or combining the separate parts or elements." But a somewhat closer agreement with the proposed usage is given in a citation from T. Granger, 1620, that "the Integrall in Logike . . . respecteth . . . integration whereby the totall is made a totall of all his members together."

In accordance with this latter definition, reality can be conceived as an integration whose parts, as one succeeds in reducing them by scientific analysis, are not parts in reality, but members of a whole, or moments of a continuum. The analysis of members would therefore be made in terms of vectors and gradients, different aspects of reality being found to vary in uniform ways, as in time, extensity, or intensity; so that in reality each member manifests itself in a variety of dimensions, and is in principle subject to reduction in terms of simple variables, each in its own peculiar continuum. What we do not find, however, is any simple entity of an elemental nature, even the atom of matter having been resolved into a pattern of variables which seems to conform with the principles of an integrative structure.

The Rubicon which has been assumed to separate matter and life now appears as a figment of man's imagination arising out of the contrast between the exact methods of quantitative analysis and the practical pursuit of ends in everyday life. In his readiness to admit that practical affairs are much too crude to serve as models of research, the scientist sometimes seems to subscribe to a mathematical dogmatism, leading not only to a point-to-point correspondence be-

[13] *Op. cit.*, p. 199.
[14] *Op. cit.*, p. 204.

tween reality itself and the counters of his mathematical instrument, but also to the generation, out of these same counters, of a conception of the universe, applicable not only to matter, but to life and mind as well. It is not a fault of the method of quantification that we have made false applications of mathematics to life and mind, but rather, I think, a faulty theory of reality which has arisen through the employment of this method.

In abandoning the notion that reality is made up of a number of finite elements, we find ourselves provided with quite another means of orientation, without in any way destroying our tools of calculation. Indeed, by putting these tools in their proper place as tools, we can the better command their employment, perhaps even in fields where they have hitherto seemed to be of little use. But, however that may be, so-called qualitative experiments, such as those of animal behavior, have their unquestionable merits, not only because a quantitative measurement is as yet impossible for lack of an adequate technique, but also because our new orientation shows reality to be qualitative as well as quantitative in its nature. This does not mean that measurements are sometimes unnecessary, or that reality can ever be probed to its depths without them. It does mean that measurements are at best approximations, to be appropriately applied in clarifying what would otherwise remain vague and obscure, and that the measurements and formulæ themselves are and must remain the expressions of facts, the concreteness of which always escapes the processes of naming and numbering.

I now wish to add a few inferences which this theory of integration suggests in the field of psychology, and also in the relations of psychology to biology and physical science.

The psychologist finds his data in experience *per se*. It has often been felt by him—and more especially by his forerunners, the philosophers, who so largely set his problems for him—that experience *per se* is a world apart from all the rest of existence, and, moreover, that consciousness is a private individual world beyond which the observer can never pass so as to penetrate in any way into the experience of another person. This "private" view of mind is, I think, one of the pseudo-problems or paradoxes arising from speculation and the admission of a Rubicon. If experience be regarded as furnishing the fundamental data of all observations, and therefore of all scientific facts, it no longer appears that the privacy of experience is any more binding upon a psychologist than it is upon a biologist or upon a chemist. Each must begin his inquiry into reality with experience; yet scientific interest is never limited to the manifest data of observation, but leads always to the integration of observable data into constructive wholes. Even though a chemist may employ means of

completing the picture quite other than those employed by a psychologist, or even a biologist, the disparity of method and interpretation is perhaps never so great as we have been wont to suppose. For though the psychologist deals primarily with the phenomena of experience as they are, he is by no means unmindful of the correlations between these phenomena and the integrations of a physical stimulation in which they somehow must originate; and he must also take into account the physiology of sense-organs and nerves which mediate the phenomenal event of their mental registration. Similarly, the biologist turns to psychology, on the one hand, and to physics and chemistry, on the other, for correlations with experience, with life, and with organic growth.

I believe, therefore, that in the study of mind, we are no more restricted to the experience of a single individual than we are in the study of matter, and that mental phenomena are as objective as physical phenomena. Furthermore, I believe it a compulsion of logic rather than a result of observation that has brought us to accept observed data as distinct and independent entities, thus leading us to conceive the inanimate world as an assemblage of parts which taken together constitute a mechanism. But since this idea of a mechanism has seemed to afford the only way in which one could overcome the teleology of the idealist, who regards reality as completely determined by the phenomena of individual experience, the implications for science have usually been those of materialism and a reduction of both mind and life to the less flexible atoms of matter. In order to test both the assumption and the implications of mechanism, let us start afresh from experience, as man must have started whenever an inquiry was first undertaken. We shall then find, I think, that though these phenomena lead us through innumerable types of *configuration*, the underlying *integrations*[15] that determine the essential nature of reality are alike in the general characteristics of their uniformities. Instead of conceiving science as a broadly extended field marked off into separate compartments, each one a special science, a more appropriate idea would be that of one enormous configuration whose ramifications are all interwoven, and whose integrative sub-structure, though it can only be studied effectively from different and strictly defined points of view, is nevertheless essentially one unified totality. And hence, whether it be physics or chemistry, psychology or behavior, that engages the interest of

[15] *Configuration* is here used as a term for the description of any manifest or observable whole, such as an atom, a living cell, or a sense-perception. *Integration*, on the other hand, applies to the underlying substrata of these phenomena, the attributes of which are not descriptive, but conceptual, such as energies, currents, radiations, with their varying vectors and gradients.

the specialist, the same logic, and the same methods of calculation must be employed by him in tracing out the ultimate aspects of reality.

In the study of mind we start with a whole, and end with more or less differentiated and independent parts, or "contents" of consciousness. In the study of organic life we do the same; for the semi-automatic reflexes, to which analysis reduces the organism, are but by-products of evolution, finding their proper place as semi-independent members of the whole, rather than as organic units out of which the whole is composed. Likewise, I venture to remark that seemingly independent and self-sufficient entities of the physical universe, such as stones, grains of sand, or even atoms, are in reality the by-products of more subtle and less readily manifest processes of change, into the integrative structure of which modern science is penetrating ever deeper and with ever increasing assurance.

In this connection I may quote from an address by a physicist, Professor G. W. Stewart, who states with regard to the theory of atomic structure that "to-day we regard a *quantum* theory more seriously. Although not as consistent as the classical theory, its use in radiation is or should be just as orthodox. While formerly we were inclined to call attention to the formal character of the theory and the failure to explain any mechanism underlying it, to-day we realize that neither the classical nor the *quantum* theory gives us the mechanism. This mechanism, though fundamental, is a detail, and the evidence is that we can make progress more rapidly by following a successful formal principle than by speculating about the nature of the mechanism itself. Our willingness to adopt as a working theory such a formal principle is not a fault, but a virtue."[16]

This statement may be paralleled by the conclusion reached by Fritz Reiche in his recent book on the Quantum Theory. "It appears certain," he writes, "that there are in mechanical and electrical systems discrete and outstanding conditions of a quantum-type which contrast strikingly with the continuous multiplicity of the conditions that have hitherto been regarded as 'classically' possible. But where lies hidden the deeper cause which occasions these radical departures of nature? Will the solution of the puzzle be given with greater knowledge of electricity and of the constitution of the electro-magnetic field? Even if we do not push the question so far, a number of unanswered questions still lie before us; for it has not yet been decided whether these quantum-conditions actually exist in stability, as Planck's first theory suggests, or if not, whether even the intermediate conditions, advanced by the second theory are possible. As yet we are in complete darkness regarding the details of absorption

[16] "Certain Allurements in Physics," *Science*, 1923, 57, p. 4.

and emission, and we do not know how the explosive quanta of radiant energy are transformed into the vibratory phenomena observed at a distance from the atom. Is radiation actually propagated as the classical undulatory theory teaches, or does it too have the character of a quantum?"[17]

It would be altogether too venturesome for one untrained in physics to suggest an answer to these questions; but if the quantum-theory casts doubt upon physical mechanisms, as Sherrington's results from sprouting nerve-fibers cast doubt upon the efficacy of physiological mechanisms, perhaps the gulf long supposed to exist between matter, on the one side, and life and mind on the other, need no longer dismay us. At least it is conceivable that a bridge may be constructed whose piers are of equal reality; for surely it is the lack of such a stable footing that has led to the contradictory principles of mechanism and teleology which have hitherto held sway in these adjacent, though distinct, domains.

If we can thus deny the crude reality of the mechanism, as an assemblage of parts working blindly together, we shall be able to find in the formal principle of pattern or configuration which we have substituted a picture that corresponds both to practical life with its means and ends, and to scientific facts which exist each in its own right.

What I have attempted to suggest, then, is a conception of integration that can be employed as a substructure for all the manifold configurations and patterns of observed and recorded data. If I have given greater heed to physical and biological sciences than to the social sciences or the humanistic disciplines, that is because the principle in question seems to be so obviously appropriate to art and literature, to language and history, that one need do no more than suggest its application to them. It should be made clear, however, that integration is intended to serve as a sort of common denominator for all phases and all types of research. While in many subjects, such as history, literature, and the fine arts, we are at present more concerned with the elaboration of superficial configurations than with their underlying integrations of energy in time and space, nevertheless, as we go on, we shall undoubtedly be able to make increasing use of the contacts between the lower and the upper levels of factual experience, so that in course of time the knowledge gained by the physicist, the chemist, and the biologist will come to furnish both a complement and a substantiation of artistic, linguistic, legal, and commercial practices.

Even as matters now stand, without looking into the dim future for the unification of all lines of research, our present procedure con-

[17] *Cf. Die Quantentheorie,* Berlin, 1921, pp. 160–1.

forms more nearly to the principles of integration than it does to either a supposed mechanism or a teleological purposiveness. Surely *significant form* furnishes the key both to the artistic impulse and to the phenomenon of beauty; a work of art is neither an accretion of parts, nor the consummation of a purpose, but a pattern, the configuration of which is apparent even in the rough, partly hewn works of a Michelangelo, or in certain mutilated torsos of antiquity.

Likewise in history the crude configuration of events furnishes a generalization within which documentary and other evidences are discovered to fill the gaps and give a completely articulated account of what has happened. Nor do we proceed otherwise in a linguistic study of words and their grammatical and syntactical structure.

It might be thought of little consequence whether the motive of research be actuated by a theory of assembling parts, or one of seeking ends; and that the theory of integration here advanced is only another word for describing a procedure which in any event is controlled by special conditions, and is therefore not likely to be helped or hindered materially by any one of these generalizations. But this I doubt; for sooner or later we must come to generalizations, and one's philosophy, unsystematized though it be, influences one's detailed work in a larger measure than is often supposed. Furthermore, for lack of a common understanding as to the general nature of experience and its objects, our research is apt to lead us on divergent roads and to such distances from our common point of departure—the observation of experience—that one is no longer able to see or even rightly to estimate the direction which another may have taken. Thus we are led into narrow specialization; the results of our labors being not only less fruitful than they might otherwise have been, but, lacking an adequate perspective, also in danger of distortion and untruth.

If, therefore, the Rubicon between life and mechanism can be crossed by the adoption of a general principle of research which applies equally in all fields of inquiry, something surely will have been gained in the enlargement of scientific method, and in the community of scientific interests and results.

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SCIENTIFIC METHOD AND MORAL CONCEPTS

I

THE problem of responsibility is a grim verification of Poincaré's statement that the commonplace things of life are the most inscrutable.[1] How can experiences so common and vivid as the sense

[1] Henri Poincaré, *Science and Hypothesis*, 1905, preface.

of duty, the sense of effort, and the sense of guilt enmesh us in such logical tangles? Is it because the problem of evil, in the last analysis, is subject to solution through deeds rather than through reasoning? William Healy, a veteran student of delinquents, is wont to speak of responsibility as a metaphysical question. Indeed, in human conduct, the familiar and the metaphysical seem to meet. Dr. Healy's pronouncement on the subject is, so far, entirely too modest. In this age of national and international moral disorder, the dire need of understanding the relation of justice to misdeeds is such that we might well pray heaven for enlightenment. The problem of evil seems as inscrutable as the cosmos of which it is a constituent. Our discussion of evil of necessity leads us, like every bitter problem, to metaphysical grubbing. Responsibility offers a metaphysical problem for two reasons: First, because it seems to remain aloof from a vast accumulation of data regarding so-called "causative factors" of delinquency. That is, the problem of responsibility has a baffling way of eluding experimental data. It is this which seems to leave it the most threadbare and baffling problem which thinking has ever encountered. It is this which leads Warren to call the question of freedom the "Wandering Jew of Science."[2] The question of responsibility is called metaphysical because it demands reasoning of that abstruse and unwonted sort for which philosophers are supposed to have a penchant. Yet, one must avoid the indiscreet hurry with which many thinkers conclude that the scientific mode of approach to the problem is less "transcendental" than is philosophical reasoning. It is not at all evident that science's habit of understanding an effect as the inevitable result of past states is less "other-worldly" than Plato's view that all things strive to imitate an archetypal ideal. It is doubtful, in short, whether any human being has ever met a *quantity* or a *state* "face to face." Only the balances can encounter true quantity: to man, both quantities and states always appear as *intensities,* but an intensity is as much quality as it is quantity, as Bergson has shown. Quantities and states, in short, only people that metaphysical sphere which ever hovers over laboratories, ready to shed providential light where there is darkness. But even the laboratory is a battle-ground of the never-ending moral turmoil of life. Is quantitative analysis able to shed light on this sort of darkness also? The kind of reasoning which a man will regard as "recondite" and "metaphysical" too often depends on his past habits of thinking. "The familiar is the true," we say, and this holds for thinking as for all else.

In most instances, one's logic of morals will depend on whether

[2] Howard C. Warren, "The Mental and the Physical," *Psy. Rev.*, Vol. XXI (1914), p. 79.

we know evil through its sting, or whether we simply speculate about it while it is safely shut up in a cage. The latter is the professional intellectualist's advantage, or should we say "disadvantage," since in a sense he, too, is in a cage—the six walls of a classroom. We should learn to know evil from all sides, even if this leads to the sacrifice of clear-cut formulæ regarding it. The best criterion of evil is that which Henry Osborn Taylor calls the "criterion of the whole man," for we sin, not with one faculty, but with our whole being.

"All the elements of our nature have a validity for us. We may disregard the pointings of none of them either in the conduct of our lives or in our search for truth. Indeed it is but a warped and partial being that will always act from one set of motives, always regard the same kind of data, and follow a like course of reason. The heroes of history, the chief workers in all the fields of human effort, even in their devotion to well-considered ends, have acted from feeling as well as under the rational direction of their minds. The heart's blood tells, and the impulsive devotions of the spirit, as well as the logic of the intellect."[3]

Are not feeling and volition as truly sources of comprehension as the intellect? That we have a double mode of understanding is a doctrine at once ancient and insistent in its appeal. Aristotle recognized such a distinction in his separation of the active from the passive reason. St. Anselm acknowledged this dualism of thought in his opposition of reason to faith. The difficulty reappears in Kant's distinction of pure and practical reason. Bergson's distinction between the intellect and intuition represents a modern version of the problem, and his work leaves the dualism of knowledge clearer now than ever before. If the distinction between formal and moral reasoning is valid, it should be possible to demonstrate that they rest on entirely different psychological processes, and make use of entirely different logical assumptions. Such a differentiation between formal and moral logic is provided for by an analysis which we owe to H. B. Alexander.[4] He indicates two psychologically distinct modes of thought, and derives from them two equally distinct modes of experience.

"There are two habits or modes of thought essential to all reflection which are responsible for the main puzzle of philosophy and the inherent contradictoriness of reason. The antithesis to which they give rise has been variously designated. With the Greeks it was the contradiction of the one and the many, of being and becoming; with the moderns it is the problem of identity in difference, or, in natural science, of uniformity and variation. All these antitheticals arise

[3] *Freedom of the Mind in History*, London, 1923, p. 3.

[4] H. B. Alexander, *Nature and Human Nature*, Chicago, 1923, pp. 59–60.

from the contemplation of the *thing*, that which suffers change, yet remains self-identical. In the mind's history it has found various solutions. In æsthetics reconciliation is effected by the notion of harmony; in psychology, by the conception of personality; in natural science, by the doctrine of evolution."

A free act, says Bergson, is the issue of one's whole nature. But, can this "whole nature" be treated as *a measurable sum of quantitative factors?* Bergson would not agree to this, but scientific method, if it applies to morals, must show that conduct is the product of a definite sum of factors, and that it is subject to perfect prediction.

II

"Let us face the issue squarely," says Warren.[5] "It is time for science to recognize that the data of psychology conform to a uniformitarian pattern also. If the "reign of law" means automatism, should not the term "automatism" be purged of its stigma? Is psychology to remain under the imputation of holding a primitive conception of the world from which other sciences are fast escaping?" On a later page Warren adds: "In our day it is no longer assumed that the movements of planets are guided by angels. We have ceased to regard gravity as a mystical substance. Our children soon abandon the idea that an automobile is propelled by a horse concealed within." But is it more plausible to suppose, as Warren does, that the horse conceals a machine which propels him? We may, if we choose, denounce the animistic explanation of material events as constituting the mental childhood of the race. But, then, on what grounds could we deny that the mechanistic explanation of living events constitutes the "second childhood" of our mental history? It is apparent that, if either mechanism or vitalism are to be discredited, it must be with reference to standards other than satire. Now, the accredited standard of science and philosophy alike is empiricism. But it is not generally recognized that empiricism may mean one of two radically distinct things.

There is the sort of empiricism which counts only the quantitative aspect of a change: this is the empiricism of exact science. Exact science is satisfied if only it can prove that there is a quantitative equivalence which persists throughout change. Science thus tends to ignore the change itself, and to consider only the antecedent and consequent state. On one point the determinists and "free-willists" agree, namely, that both determinism and free will rest on the dependence of present conditions on past conditions. Our deeds, if they are free, no doubt rest on our past, *but they can not be determined*

[5] Howard C. Warren, *op. cit.*, p. 86.

by our past in its quantitative aspect. We have moral experience because we resist such determination, deriving our freedom from our power of basing conduct on past *values,* not past quantitative states. Moral experience must of necessity be understood as introspective and qualitative, because *effort,* with which moral acts are always associated, is itself qualitative. When the physicist speaks of a body "following the path of least resistance" he has not quite shorn that body of life, for the "least resistance" is still "some resistance." Only a body which should invade the forces which act on it could know *resistance*; but in this case, it would violate the law of inertia, that is, it would change from an inert to a living entity. To secure matter which is completely "dead" physics must then say that an inert body is one which follows the path of *no resistance.* This is to get rid of all animism, but the very moment this is done the law of inertia becomes meaningless, since it merely states that a body will follow the path it will follow; which statement, as Eddington observes, is not very profound. In this case, the spiral path of the earth through space will be as much a "straight line" as any. It will, in a sense, be the "shortest path" the earth can take. There is here no paradox, for if we begin by defining a body as non-living, this means that it has no choices of its own, and the equivalence of all paths is only the geometrical reflection of this fact. Paradox only arises when we try to imagine that moral experience is possible in a world in which all movements are inertial movements. Now, this is precisely what we seek to do in trying to apply the exact methods of the exact sciences to human conduct.

The power of science to make exact predictions of physical changes is exhibited simply and clearly in the device known as the parallelogram of forces. Suppose that some body, *b*, is acted on by two forces, whose strengths and directions are represented by the lines *ba* and *bc*. It is only necessary to complete the parallelogram of which *ba* and *bc* form adjacent sides. The diagonal of this figure represents the resultant direction which the body *b* will take. What a day of triumph it would be for those enamoured of mathematical psychology if this device, so simple and potent in physics, could be applied to problems of human responsibility. Consider, then, in place of the body *b*, a human being *E* whose destiny we are to resolve into a diagonal of the many forces that act on him. To be sure, these forces are legion and we are unable to make a complete catalogue of them. But this is a practical, not a theoretical, difficulty. The theory of the parallelogram is not to be blamed for our ignorance. Even if our list of the factors of conduct is incomplete, our prediction of conduct can at least be approximate.

In truth, there is a certain safety afforded by our ignorance. If the individual *E*, contrary to our expectations, fails to follow the diagonal prescribed, we can always rescue the theory on the grounds that we miscalculated the forces involved. Even this gives us two alternatives. We may say that the "unknown factor" which we missed is some inherited "constant" in the individual's make-up, or that it came into existence spontaneously. Modern Weissmannism, that most formidable prophet of destinies, has allowed both of these alternatives. The individual is a sum total of unit characters, but this sum never reaches unity. That is, ½ of one's traits are determined by one's parents, ¼ of them by one's grandparents, *etc.* Thus, we add ½ plus ¼ plus ⅛ . . . always approaching unity, but never reaching it. Heredity always has room for any "new antecedent" factor which present explanation may require.

But, it is just this perfect flexibility of Weissmannism (which paradoxically gives Weissmannism its perfect rigidity) which puts it out of all touch with any real moral issue. The utter uselessness also of the parallelogram of forces in morals consists precisely in its remarkable "ability" of dodging the question, "was this man's delinquency the result of an unavoidable hereditary compulsion, or was his delinquency due to a spontaneous act of will, a stir of evil intention?" Trial by jury is so harrowing just because we must make allowances for intention, but the parallelogram, which only portrays the act *after it has occurred,* must treat all factors on the same quantitative level. If the parallelogram is able to predict conduct *before* it occurs, this is only because the anticipated act was preceded by a number of similar ones in the past. That is, we are able to predict *E*'s conduct because he is governed by habit, *i.e.,* to the extent that his actions are mechanical and not effected by moral endeavor. If either the forces *ba* or *bc* should change, the diagonal, too, will change: the diagonal changes *when* it is changed—there is no question of appropriateness in time. But the *appropriateness in time* of an act holds its whole moral essence. *Oughtness* refers to the time-synthesis of acts, in conformity with desired goals. Every delinquency can be stated in terms of an act which *should* have occurred at a *certain time,* but did not. The parallelogram of forces, like all the "exact" devices of science, is without temporal significance. That they escape all implication of time is indeed the mark of their "exactness." Nor can the parallelogram of forces envisage the factor of direction: one might have a score of such parallelograms, scientifically identical, but with the absolute direction of the diagonals unique in each case. There are an infinite number of combinations of forces all of which give exactly the same diagonal. Just so, in morals, any given act may have an infinite number of possible

forces; and after we have "guessed" what motive we imagine to be operating, the device of the parallelogram of forces will always find a pattern to correspond to it. It is a device which proves nothing just because it can find an endless number of explanations, all equally plausible. For example, a great artist would perhaps rebel at the occupation of painting signs more than anyone else, though quantitatively viewed, these activities are alike. However, the determinist need not be embarrassed about applying the parallelogram to this case. This device can do no more than to represent their *actual* opposition. In St. Augustine, vice and virtue struggled for supremacy, and when virtue won, vice repelled rather than attracted him. But this miracle is apparent externally only as a change of direction. The quantitative method can record the change, but can not predict or explain it.

In truth, this device will suffer reverses only if E should deviate from a specified diagonal when *all the forces are known* and do require that diagonal; but from the external and quantitative point of view, *all the forces are never known.* For every new state that science discovers, new "gaps" spring up to bound it; so that there is a certain ignorance which grows *pari passu* with knowledge. Because of the infinity of the world's states of knowledge and of ignorance, the theory of mechanism can neither be absolutely proved or disproved.

But, introspectively viewed, conduct wears an altogether different aspect. The sinner's misdeeds may seem to his conscience to be inexcusable in view of his known powers. This is a situation in which the actual diagonal we pursued is known to be the "wrong" one in view of the known forces involved. Nor is it the logically "wrong" diagonal, but the morally wrong one. The mechanist's only escape will be to treat this sense of moral wrong as an illusion. But, if it is an illusion, it is entirely in a class by itself. Illusions are normally *exceptional* and *dispensable* experiences. The sense of responsibility, however, is the *usual* experience, and is biologically and spiritually indispensable. Whoever lacks conscience, whoever is incapable of a sense of guilt, is counted a monster, and is morally insane.

Thus, however great the measurable factors of delinquency may be, no matter how feeble-minded, poorly nurtured, and tempted the evil-doer may be, there is always another factor posited, the factor of free will; so that for every evil deed, no matter how great the provocations, there is always some blame. Here we encounter again the two *faiths* which move us, and which underlie two distinct modes of reasoning. As scientists, we must blindly assert the universe to be a "closed system" when we know very well that the gaps of igno-

rance will never be closed, and even though we go right on feeling personally responsible even for our opinions regarding the "closed system." As responsible citizens we can not absolve wrong-doing from blame, but this we at once belie with our pity. We must hold to one faith to have science and to the other faith to attain the good. We are thus, as Taylor observes, working unions of inconsistencies. Now these inconsistencies become apparent in both our thinking and in our doing, but they have a different form in each. But, after all, we find the same solution for all difficulties, whether in the sphere of thought or in the sphere of deeds. That solution is *labor*: in labor we have bound up the whole realism of conduct and of thought. Our ineradicable conviction that there is no royal road either to knowledge or to virtue keeps us from thinking that either the one or the other is illusion. The things of life are as real as the price we pay for them, and the price of labor is set by nature and from it there is no escape. The intellect and the moral sense differ only in this: the first represents labor as always just ended or just begun, whereas moral intuition represents it as always in action.

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BOOK REVIEWS

Philosophie der Individualität. RICHARD MÜLLER-FREIENFELS. 2d, revised edition. Leipzig: Felix Meiner. 1923. vi + 289 pp.

Irrationalismus. Umrisse einer Erkenntnislehre. RICHARD MÜLLER-FREIENFELS. Leipzig: Felix Meiner. 1922. v + 300 pp.

In recent years Müller-Freienfels, whose *Psychology of Art* is known in this country,[1] has been enormously busy with things moral and metaphysical, which he also approaches through the portals of psychology. Since 1919 he has published nearly a dozen books in exposition of a general *Weltanschauung* and its bearings on education, religion, German ideals, and contemporary philosophy. The two volumes at present under review supplement each other closely in giving an abstract statement of the author's general position, a form of persönalistic vitalism. The *Philosophy of Individuality*, which is the earlier of the two (1st edition, 1921), concludes with the remark that "Mechanism is the image of our modern, rationally ordered life, but humanity, lest it be strangled in this machine-like existence, must necessarily come to a vitalistic philosophy which re-

[1] See this JOURNAL, Vol. XIX, No. 24, p. 664, for a review of his *Psychologie der Kunst* (2d ed., 1922) by H. S. Langfield, and Vol. X, No. 14, p. 389, for a review of the 1st edition by Kate Gordon.

gards mechanism as temporally conditioned and urges the claims of irrational vitalities. . . . Rational order is certainly an important form of life, but we must preserve our sense for the elusive, for the mystery and the infinity of existence."[2] *Irrationalism* takes up the same theme in its opening pages where one finds the challenge: "Vitality versus mechanization, creation versus ratiocination, personality versus uniformity!"[3] The general tenor of these passages is almost too familiar, as they describe the common meeting-ground of all irrationalists, but scarcely serve to distinguish their author among its vast throng of mystics, romanticists, and personalists. One expects an individualist to be somewhat more individual. Such very different philosophers as Nietzsche, Bergson, and Wm. James come to mind as possible authors of the above sentiments. But one wonders with whom to associate Müller-Freienfels, and what the distinctive features of his vitalism are.

If one were to ask this question of contemporary German thought as a whole, the answer would be fairly clear, because the antithesis between rationalism and irrationalism, mechanism and vitalism, has taken on new shadings in German discussion during the last ten years. Political and social problems having come to the fore, there is an unmistakable and widespread tendency to give the eternal issues of philosophy, like that between mechanism and vitalism, a political and social significance. Each of the familiar schools makes a characteristic effort to bring its traditional "rationalities" to bear upon the "irrationalities" of concrete social life.[4] And outside of the familiar, well-established schools, like those of Rickert, Husserl, Dilthey, the Friesians, and the Kantians, we find new and original instances of the same tendency. Thus in Oswald Spengler's *Untergang des Abendlandes,* to quote a sensational yet serious example, mathematics and mysticism are no longer appraised as to their significance for an abstract metaphysics, but rather as interacting factors in the rise and fall of civilizations. The predominantly vitalistic character of German philosophic tradition pervades the book, and is registered in the epithet "*Faustian*" which Spengler applies to the whole of western culture. This same vitalism makes itself more popularly felt in the current antithesis between German *Faustian Kultur* and its late decline into American mechanistic civilization. The Allies fought the war to save civilization, but the Germans fought it for the higher good of *Kultur,* and writers on all levels of respectability either bemoan the increasing mechanization (*Amerikanisierung*) of Germany, or hope that the conquered

[2] *Philosophie der Individualität,* pp. 274–275.

[3] *Irrationalismus,* p. 15.

[4] This is a favorite Neo-Hegelian way of describing the tendency, but all schools share in it and recognize it in one terminology or another.

will still lead captive the conquerors to a more vitalistic culture.[5] At its worst this way of putting the mechanist-vitalist antithesis represents a loose rationalization of patriotic pride, and there are many indications that its ridiculously inept analysis of modern men and their conditions is giving way to better understanding. But in any case there may be at least as much reflection in the association, however crude, of mechanism with American business or skyscrapers as in a vague professorial gesture toward all the principles and facts of natural science from Newton's laws of motion to the realm of animal tropisms. And at its best this political current of German thought continues in the widespread effort to carry philosophy beyond a dialectical refinement of traditional abstractions into concrete problems, especially those of education and *Kulturpolitik*.

The works of Müller-Freienfels lie at the periphery of this movement in their word and feeling, but carry scarcely any of its inner life and vigor. At the same time they avoid a characteristic limitation of the movement in that their approach to world problems and solutions is much less Germanocentric than is generally the case. Müller-Freienfels, for instance, does not sink himself into the problems of German education with that earnest concentration which distinguishes some of his contemporaries. One may see in this a lack of seriousness, or one may see the liberation of a much-travelled man, who can no longer entertain a monistic conception of events. At any rate, it is quite rare to find German philosophical writing so receptive to American and French thought, so little dominated by the systematic traditions of German philosophy.

It must be confessed, however, that the unusually broad contacts[6] of Müller-Freienfels are partners to a certain thinness of philosophic understanding. The distinction between fact and theory, with which every philosophy must somehow grapple, is never even recognized by him as problematical. The reader is at first charmed by the apparent sensitiveness of his author to diverse impressions, but soon alarmed at the uncritical way in which this sensitiveness feeds with equal pleasure and concern upon dogma and experience. *Irrationalism* is the most blithely omnivorous theory of knowledge ever written. The first three chapters set forth the limitations of a rationalistic theory of knowledge; next follows the sensible proposition that knowledge is an activistic dealing with

[5] This antithesis goes back to days before the war (See, for example, Walther Rathenau's *Zur Kritik der Zeit*, 1912) and continues to the present (See Eduard Meyer's *Spenglers Untergang des Abendlandes*, 1925). Rathenau and Edward Meyer are influential names, but the younger writers are getting away from the above dualism.

[6] For the broad contacts see *inter alia* the bibliographies which accompany these books.

particulars, and then a chapter each is devoted to the cognitive functions, within this process, of instinct, empathy, creative intuition, and introspection. The book is genially written, and can be read with some profit as a prismatic analysis of twentieth-century "common sense." But the inference to be drawn can scarcely be put in the words of Kant that "this is an age of criticism."

Just as the age of criticism had its common and its uncommon sense, so this present age of experience has its depths and its shallows. It is, perhaps, unfair to judge an avowed irrationalist, like Müller-Freienfels, by standards of rigorous intellectual criticism; one does better to ask what dimensions of experience a book like his *Philosophy of Individuality* discloses. In comparison with *Irrationalism* it easily deserves the prize-award accorded to it by the Nietzsche Foundation in 1921. The first section deals with the irrationality of individuality, by which the author means the elusiveness and paradoxical character of the "self," so brilliantly described by Wm. James in his chapter on "The Development of the Self." Müller-Freienfels himself recognizes the similarity, and regards this section of his book as an attempt to improve on James's analysis.[7] There follows a section describing the various processes by which individuals become inwardly unified and similar to each other, that is, "rationalized," as the author calls it. Habituation, adaptation, and imitation are regarded as the ultimate principles of this process both in nature and in art. A third section deals with problems of value, and distinguishes different ranges of stability in evaluation, beginning with evaluations that hold only in specific circumstances and for a single individual, then proceeding to wider and wider spheres of validity. Of absolute and universal goods the author is sceptical, and naturally there are more than nine spheres in his heaven. This section of his book is an admirably simple and clear exposition of ideas which others have made to appear very complicated. By contrast, the fourth and concluding section is unusually obscure and contains several surprises. It suddenly turns out that Müller-Freienfels is not sure whether individuality is an ultimate reality or not. He will only commit himself to a "*vita individuans*, leaving the question open whether life (as an infinite activity pervading non-living matter) is in itself individualized or not."[8] This declaration paves the way for a chapter on immortality, in which a transient participation in eternal life (a very mutable eternity!) is valued more highly than individual immortality. The end of the volume thus confirms a suspicion aroused in the opening section on the paradoxes of the self, namely, that the title of the book is mis-

[7] See note in *Philosophie der Individualität*, p. 278.

[8] *Philosophie der Individualität*, p. 231, parenthesis, p. 230.

leading, since the primary reality which Müller-Freienfels describes is the flux of life and individuality a cherished, but little clarified, second.

The *Philosophy of Individuality* lacks integration, inasmuch as the themes treated seem somewhat arbitrarily selected and do not combine into a finished whole. Certain traditional problems of philosophy find their way into the discussion apparently for no other reason than that they are traditional. But perhaps it is range rather than unity of experience which should be expected from an irrationalist. Unfortunately, however, the chief experience suggested by these books is that of reading contemporary philosophy. Of course, they are a criticism of the rationalistic side of modern thought, and a criticism that is in some way no doubt lived and felt. But the author seems more preoccupied, after all, with theories that he himself decries as pedantry than with an interpretation of the experience which prompts him to revolt. No doubt Müller-Freienfels is somewhere in more vital contact with reality than in these two books. He has written much on concrete subjects, and his work on esthetics has received favorable comment. His book on *German Character and German Culture* was a disappointment to the present reviewer. The first part is an apology for the enterprise in the form of an attempt to compromise between theories which deny the existence of national characters and those which cherish an over-simplified conception of them. The body of the work is likewise a weighing of familiar judgments about German life and character, but scarcely offers anything new except a convenient exposition. Honest compromise between conflicting traditions (in this book between the Potsdam and Weimar traditions in Germany, but elsewhere between mechanism and vitalism, behaviorism and dualism, *etc.*) is characteristic of Müller-Freienfels's method; new investigation is only accidentally furthered in this way and the results are reliable only if the original traditions rest upon sound insight. The book concludes on a vitalistic note, again rather thinly sounded: "It is the task of all German education to develop the *Faustian* element in the individual in all its breadth, depth, and strength, placing it as a shining light before the coming generations."[9] Here we have irrationalism conceived as a social force, like the *Faustian* urge in Spengler's philosophy of history. But Müller-Freienfels merely waves a friendly greeting to social facts from quite a distance, where he stands, not in the present current of German thought, but rather amid the ideas of Bergson and Wm. James, whose abstractions were hardly conceived with the present world situation in mind.

[9] *Psychologie des deutschen Menschen und seiner Kultur*, 1922, last two pages.

Imagine the chapters of James's *Psychology* on Instinct, Habit, The Will, Reflection, The Development of the Self, The Perception of Reality—all these rewritten without an anecdote or experiment recounted, and without the pioneer metaphysician peering through. The ghost of theory thus resurrected gives a very fair impression of these two books of Müller-Freienfels. He accepts at face value almost the entire conceptual sphere of James's psychology with all its obvious contradictions and tentative hypotheses. For James, concepts like "instinct" were always "counters to reckon with," jottings in clarification of concrete situations with which they were intrinsically bound. For Müller-Freienfels, who in spite of his "irrationalism" is not entirely free of German formalism, these same concepts become an abstract system. How fluid and ineffectual this psychological terminology is when divorced from an exact reference can be learned, without European example, from vast quantities of the less than half of one per cent. psychological philosophy already too prevalent in America, and to establish this idol of the American market-place in a foreign land is scarcely a first-rate achievement of either the rational or the irrational spirit. Those whose thinking has virtually grown out of the fruitful interplay of psychology and metaphysics in the philosophy of Wm. James will find no new ideas in these books of Müller-Freienfels, but the distinction between a merely verbal and an actual continuation of James's enterprise may be brought home to them. On the other hand, readers of *Irrationalism* and the *Philosophy of Individuality,* who have not been in the living current of James's thought, are likely to be confirmed in their impression that experimental psychology as yet makes little contribution to metaphysical construction.

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Il Concetto della Storia nel Pensiero Scolastico. SILVIO VISMARA. (Pubblicazioni della Università Cattolica del Sacro Cuore, 5th ser., Vol. II.) Milan: Società Editrice "Vita e Pensiero." 1924.

Silvio Vismara of the Catholic University of the Sacred Heart has attempted to give an account of a scholastic philosophy of history in his *Concetto della Storia nel Pensiero Scolastico.* It is, however, largely a discussion of Croce and Gentile who have, in spite of his differences with them, influenced his thinking.

He naturally objects to Italian neo-Hegelianism on the ground that the spirit which composes historiography is too limited by documents, memory, and real facts to be said to have any part in creating history. He sticks to his dualistic metaphysics and insists that reality is rational, not because it conforms to our reason, but because our

reason conforms to it. It is neither a chaos, nor the result of chance, nor of the vacillating impulses of a creative spirit. It is in the fullest meaning of the term the creation and special ward of a divine Wisdom and Providence. History then must be the working out of the creator's will. It is, as his opponents also believe, a fundamental part of philosophy, and St. Augustine and Bossuet have written not only theology, but also philosophy, in their *City of God* and *Discours sur l'histoire universelle.*

What they have done is to trace the idea of humanity through its various stages of realization. They have not merely noted the stringing together of isolated events. The real problem, however, for a neo-scholastic is to reconcile the traditional account of the Fall which involved Mankind in its consequences and hence seemed to demand a Platonic realism, with the Thomistic (and Plotinian) account of salvation in which each individual is saved as an individual. If St. Thomas left the philosophy of history untouched, it was for good grounds. Is there not an insoluble difficulty in this problem for Catholics, since some of their doctrines demand a belief in Humanity and others a belief in separate human individuals? The reviewer does not feel that this monograph has solved it.

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JOURNALS AND NEW BOOKS

MIND. Vol. XXXIV, No. 134. The Relation between Knowing and its Object (1): *A. C. Ewing.* Plato's Philosophy of Art: *R. G. Collingwood.* Bradley's Place in Philosophy: *J. H. Muirhead.* Epicurean Induction: *J. L. Stocks.* Religion, Metaphysics, and Practice: *L. A. Reid.* The Origin of Bradley's Scepticism: *F. C. S. Schiller.*

THE MONIST. Vol. XXXV, No. 2. Kant Commemoration Number. Lectures delivered at Northwestern University, Dec. 4–5, 1924. The Legacy of Kant: *E. L. Schaub.* The Need and Possibility of an Imperativistic Ethics: *G. T. W. Patrick.* The Cultural Environment of the Philosophy of Kant: *Martin Schutze.* Kant, The Seminal Thinker: *J. A. Leighton.* The Religion of Immanuel Kant: *E. S. Ames.* Kant as a Student of Natural Science: *S. G. Martin.* Kant's Philosophy of Religion: *J. H. Farley.* Kant's Philosophy of Law: *E. L. Hinman.* Kant's Doctrine Concerning Perpetual Peace: *J. F. Crawford.* The Sources and Effects in England of Kant's Philoscphy of Beauty: *E. F. Carritt.* Kant's Copernican Revolution: *Frank Thilly.*

PHILOSOPHICAL REVIEW. Vol. XXXIV, No. 3. The Philosophy of James Edwin Creighton: *Frank Thilly.* The Philosophy of James Edwin Creighton: *George H. Sabine.* Philosophers and Others: *Alexander Meiklejohn.* The Mutability of Æsthetic Categories: *George Santayana.*

REVUE PHILOSOPHIQUE. L[e] Année, Nos. 5 et 6. Saint-Simon fondateur du positivisme et de la sociologie: *E. Durkheim.* L'atomisme indien: *P. Masson-Oursel.* L'interprétation des faits matériels dans la méthode de Durkheim: *R. Lacombe.* Le problème de la mémoire historique et l'influence de la société sur la réminiscence: *J. Nogué.*

ZEITSCHRIFT FÜR PSYCHOLOGIE. Bd. 97, Heft 1 u. 2. Experimentelle Untersuchungen über Umstellbarkeit: *M. Zillig.* Ueber Momentadaptation: *F. Noldt.* Psychologische Untersuchungen an nichtdomestizierten Nagetieren, namentlich der Hausmaus: *H. Roth.* Grundfragen der Akustik und Tonpsychologie: IV, Die psychologische Akustik der Sprachlaute in ihrer Beziehung zu Fragestellungen der Wissenschaften von der Sprache: *E. R. Jaensch* u. *G. Rothe.* Die Auffassung der psychischen Strukturen vom Standpunkt der Assoziationspsychologie: *Th. Ziehen.* Soziale Verhältnisse bei Säugetieren: *Th. Schjelderup-Ebbe.*

JOURNAL OF EXPERIMENTAL PSYCHOLOGY. Vol. VIII, No. 2. The Relation Between Field Brightness and the Speed of Retinal Impression—II: *P. W. Cobb.* The Cardiac, Respiratory, and Electrical Phenomena Involved in the Emotion of Fear: *W. E. Blatz.* A New Method of Projection Stereoscopy: *E. A. Bott* and *S. N. F. Chant.* Synæsthesia in the Development of the Concept: *R. H. Wheeler* and *T. D. Cutsforth.* A Dynamograph: *Otto Ortmann.*

JOURNAL OF COMPARATIVE PSYCHOLOGY. Vol. V, No. 1. Factors Influencing Static Equilibrium. An Experimental Study of the Effect of Controlled and Uncontrolled Attention upon Sway: *F. S. Fearing.* The Comparative Aspect of McDougall's Outline of Psychology: *H. C. Bingham.* Tests of Musical Feeling and Musical Understanding: *Max Schoen.* Sensori-Motor Responses in Infants: *M. Sherman* and *I. C. Sherman.* Phototactic Reactions of Aligator mississippiensis: *A. M. Reese.* The Accuracy of the Pecking Response in Chicks: *D. Moseley.* Studies of Chimpanzee Vision by Ladyginkohts: *R. M. Yerkes* and *A. Petrunkevitch.*

PSYCHOLOGICAL REVIEW. Vol. 32, No. 3. Persistent Problems in Systematic Psychology. I. A Philosophical Heritage: *R. H. Wheeler.* An Evaluation of Current Sensationism: *Leonard Carmichael.* Lapses Influenced by Similarity: *L. W. Cole.* Statistical

Considerations in Interpreting the Effect of Training on Individual Differences: *J. C. Chapman.* What Constitutes an Emotion?: *David Wechsler.* Negative Type Reaction-Time Symptoms of Deception: *W. M. Marston.* Black: A Non-Light Sensation: *G. M. Michaels.*

Dresser, Horatio W.: Ethics in Theory and Application. New York: Thomas Y. Crowell. 1925. xviii + 509 pp. $3.00.

Jousse, Marcel: Études de Psychologie Linguistic. Le Style Oral Rythmique et Mnémotechnique chez les Verbo-moteurs. (Archives de Philosophie, Volume II, Cahier IV.) Paris: Gabriel Beauchesne. 1925. 240 pp.

Laumonier, J.: Le Freudisme. Exposé et Critique. (Bibliothèque de Philosophie Contemporaine). Paris: Félix Alcan. 1925. 172 pp. 9 fr.

Meurer, Waldemar: Gegen den Empirismus. Leipzig: Felix Meiner. 1925. xxxvi + 568 pp. 12 Mk.

Read, Carveth: Man and His Superstitions. Second Edition. Cambridge: University Press. 1925. xvi + 278 pp.

Toohey, John J.: An Elementary Handbook of Logic. New Edition, slightly revised. New York: Schwartz, Kirwin & Fause. 1924. xii + 243 pp. $1.50.

NOTES AND NEWS

At the meeting of the Western Division of the American Philosophical Association held at Urbana, Illinois, April 9–11, officers of the division were elected as follows: President, Professor G. A. Tawney; Vice-President, Professor J. Watts Cunningham; Secretary-Treasurer, Professor C. F. Taeusch.

This year an attempt will be made for the first time to include in the Summer School of the University of Geneva a week's course on the Psychology of Religion, from Monday, August 31 to Saturday, September 5. Lectures will be given by prominent scholars from various countries, amongst others by Professor J. Leuba of Bryn Mawr College, Professor Raoul Allier of the Paris Faculty of Theology, Professor Jean Monnier of Strasbourg University, Professor Robert Thouless of Manchester University, together with a number of Swiss scholars. The subjects treated are of wide interest dealing with questions of method, ecstasy, religion of the child and of primitives, magic, temperaments, conversions, religious art, *etc.* The fee for the course is 30 frs, for students 20 frs. All enquiries should be addressed to M. G. Berguer, University of Geneva, Genthod near Geneva.